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AUTHOR	Ackerman, Phillip L.
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ABSTRACT

With few exceptions, the development of adult intelligence assessment instruments has proceeded along the lines of the Binet-Simon tests for children, stressing psychological assessment over the evaluation of what an individual knows. These tests, developed over 90 years ago, were quite effective in predicting school success, but were much less predictive of success in postacademic and occupational domains. Several lines of research have converged on a redefinition of adult intelligence that places a greater emphasis on content (knowledge) over process. The problems an adult is asked to solve almost always draw on accumulated knowledge and skills. For an adult, intellect is better conceptualized by the tasks a person can accomplish and the skills he or she has developed. Research has made it clear that current methods of assessing the intellectual performance of adults are inadequate. The challenge for researchers in the future will be to develop batteries of tests that can be used to assess different sources of intellectual knowledge for different individuals. (Contains 12 references.) (SLD)

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ADULT INTELLIGENCE

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Phillip L. Ackerman
University of Minnesota

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Adult Intelligence

Phillip L. Ackerman, University of Minnesota

Child vs. Adult Intelligence

Over 90 years ago, Binet and Simon delineated two different methods of assessing intelligence. These were the psychological method (which concentrates mostly on intellectual processes, such as memory and abstract reasoning) and the pedagogical method (which concentrates on assessing what an individual knows). The main concern of Binet and Simon was to predict elementary school performance independently from the social and economic background of the individual student. As a result, they settled on the psychological method, and they spawned an intelligence assessment paradigm which has been substantially unchanged from their original tests.

With few exceptions, the development of adult intelligence assessment instruments proceeded along the same lines of the Binet-Simon tests. Nevertheless, the difficulty of items was increased for older examinees. Thus, extant adult intelligence tests were created as little more than upward extensions of the original Binet-Simon scales.

The Binet-Simon tests are quite effective in predicting school success in both primary and secondary educational environments. However, they have been found to be much less predictive of success in post-secondary academic and occupational domains. Such a discrepancy provokes fundamental questions about intelligence. One highly debated question asks whether college success is actually dependent on currently used forms of measured intelligence, or if present measures of intelligence are inadequately sampling the wider domain of adult intellect. One possible answer to this question lies in questioning the preference of the psychological method over the pedagogical method for assessing adult intellect. Recent research across the fields of education, cognitive science, and adult development suggests that much of adult intellect is indeed not adequately sampled by extant intelligence measures and might be better assessed through the pedagogical method (Ackerman, 1996; Gregory, 1994).

Several lines of research have also converged on a redefinition of adult intellect that places a greater emphasis on content (knowledge) over process. Substantial strides have been made in delineating knowledge aspects of intellectual performance which are divergent from traditional measures of intelligence (e.g. Wagner, 1987) and in demonstrating that adult performance is greatly influence by prior topic and domain knowledge (e.g., Alexander, et al., 1994). Even some older testing literature seems to indicate that the knowledge measured by the Graduate Records Examination - Advanced topic exams is comparable or better indicator of future graduate school success and post-graduate performance than traditional aptitude measures (Willingham, 1974).

Knowledge and Intelligence

When an adult is presented with a completely novel problem (e.g., memorizing a random set of numbers or letters), the basic intellectual processes are typically implicated in predicting which individuals will be successful in solving problems. The dilemma for adult intellectual assessment is that the adult is rarely presented with a completely novel problem in the real world of academic or occupational endeavors. Rather, the problems which an adult is asked to solve almost inevitably draw greatly on the his/her accumulated knowledge and skills -- one does not build a house by only memorizing physics formulae. For an adult, intellect is better conceptualized by the tasks that the person can accomplish and the skills that he/she has developed rather than the number of digits which can be stored in working memory or the number of syllogistic reasoning items which can be correctly evaluated. Thus, the content of the intellect is at least as important as the processes of intellect in determining an adult's real-world problem solving efficacy.

From the artificial intelligence field, researchers have discarded the idea of a useful General Problem Solver in favor of knowledge-based expert systems. This is because no amount of processing power can achieve

real-world problem solving proficiency without an extensive set of domain-relevant knowledge structures. Gregory (1994) describes the difference between such concepts as "potential intelligence" (knowledge) and "kinetic intelligence" (process). Similarly, Schank and Birnbaum (1994) say that "what makes someone intelligent is what he [/she] knows."

One line of relevant educational research is from the examination of expert-novice differences which indicates that the typical expert is found to mainly differ from the novice in terms of experience and the knowledge structures that are developed through that experience rather than in terms of intellectual processes (e.g., see Glaser, 1991). Additional research from developmental and gerontological perspectives has also shown that various aspects of adult intellectual functioning are greatly determined by knowledge structures and less influenced by the kinds of process measures which have been shown to decline with age over adult development (e.g., Schooler, 1987; Willis & Tosti-Vasey, 1990).

Shifting Paradigms

By bringing together a variety of sources of research evidence, it is clear that our current methods of assessing adult intellect are insufficient. When we are confronted with situations in which the intellectual performance of adults must be predicted (e.g. continuing education or adult learning programs), we must begin to take account of what they know in addition to the traditional assessment of intellectual processes. Because adults are quite diverse in their knowledge structures (e.g., a physicist may know many different things than a carpenter), the challenge for educational assessment researchers in the future will be to develop batteries of tests that can be used to assess different sources of intellectual knowledge for different individuals. When adult knowledge structures are broadly examined with tests such as the Advanced Placement [AP] and College Level Exam Program [CLEP], it may be possible to improve such things as the prediction of adult performance in specific educational endeavors, the placement of individuals, and adult educational counseling.

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